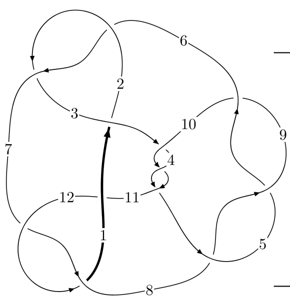
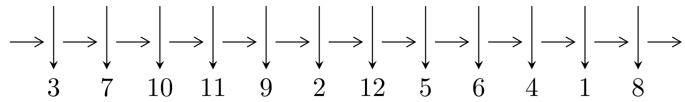
$12a_{0647}$ ($K12a_{0647}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$3{,}10 \xrightarrow[c_3]{} 4 \xrightarrow[c_{10}]{} 11 \xrightarrow[c_4]{} 5{,}7 \xrightarrow[c_2]{} 2 \xrightarrow[c_1]{} 1 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_6]{} 6 \xrightarrow[c_9]{} 9 \xrightarrow[c_8]{} 8 \twoheadrightarrow c_5, c_7, c_{12}$$

Ideals for irreducible components[2]of $X_{\mathbf{par}}$

$$\begin{aligned}
I^u_1 &= \langle u^{15} - 6u^{14} + \cdots + 8b - 10,\ u^{14} - 3u^{13} + \cdots + 8a - 2,\ u^{16} - 3u^{15} + \cdots + 13u^2 - 2\rangle \\
I^u_2 &= \langle 9u^7 - 7u^6 - 24u^5 - u^4 + 13u^3 + 35u^2 + 23b + 8u - 39, \\
&\quad 66u^7 - 13u^6 - 153u^5 - 107u^4 + 149u^3 + 249u^2 + 161a - 64u - 194, \\
&\quad u^8 - 2u^7 - 2u^6 + 4u^5 + 3u^4 - u^3 - 5u^2 - 4u + 7\rangle \\
I^u_3 &= \langle -u^{11}a - u^{10}a + \cdots + 2a - 3,\ 2u^{11}a - u^{11} + \cdots - 4a + 1, \\
&\quad u^{12} + u^{11} - 7u^{10} - 6u^9 + 18u^8 + 11u^7 - 19u^6 - 2u^5 + 6u^4 - 8u^3 + 1\rangle \\
I^u_4 &= \langle -340u^{15}a - 770u^{15} + \cdots + 249a + 651,\ -180u^{15}a + 621u^{15} + \cdots - 493a + 1534, \\
&\quad u^{16} + u^{15} + \cdots + 6u - 1\rangle \\
I^u_5 &= \langle 2a^3 + 2a^2 + b + 5a + 3,\ 2a^4 + 2a^3 + 5a^2 + 4a + 1,\ u - 1\rangle \\
I^u_6 &= \langle u^3 + b - u - 1,\ -u^{11} + 4u^9 + 4u^8 - 7u^7 - 11u^6 + 2u^5 + 12u^4 + 3u^3 - 4u^2 + 2a - u + 1, \\
&\quad u^{12} - u^{11} - 4u^{10} + 9u^8 + 6u^7 - 7u^6 - 10u^5 - 3u^4 + 3u^3 + 5u^2 + 2u + 1\rangle \\
I^u_7 &= \langle b - 1,\ 6a + u - 3,\ u^2 - 3\rangle \\
I^u_8 &= \langle -2au + 4b + 2a - u + 5,\ 4a^2 + 4a - 7,\ u^2 - 2u + 1\rangle \\
I^u_9 &= \langle b,\ a + 1,\ u + 1\rangle \\
I^u_{10} &= \langle 2a^3 + 4a^2 + b + 6a + 3,\ 2a^4 + 4a^3 + 6a^2 + 4a + 1,\ u + 1\rangle
\end{aligned}$$

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

$$I_{11}^{u} = \langle b+1,\ u-1\rangle$$

$$I_{1}^{v} = \langle a,\ b-1,\ v+1\rangle$$

* 11 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 108 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I_1^u = \langle u^{15} - 6u^{14} + \cdots + 8b - 10,\ u^{14} - 3u^{13} + \cdots + 8a - 2,\ u^{16} - 3u^{15} + \cdots + 13u^2 - 2 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{8}u^{14} + \frac{3}{8}u^{13} + \cdots + \frac{1}{2}u + \frac{1}{4} \\ -\frac{1}{8}u^{15} + \frac{3}{4}u^{14} + \cdots - \frac{3}{4}u + \frac{5}{4} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{8}u^{14} + \frac{3}{8}u^{13} + \cdots + \frac{1}{2}u + \frac{1}{4} \\ \frac{5}{8}u^{15} - \frac{3}{2}u^{14} + \cdots + \frac{7}{4}u - \frac{3}{4} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{5}{8}u^{15} - \frac{13}{8}u^{14} + \cdots + \frac{9}{4}u - \frac{1}{2} \\ \frac{5}{8}u^{15} - \frac{3}{2}u^{14} + \cdots + \frac{7}{4}u - \frac{3}{4} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{8}u^{14} - \frac{3}{8}u^{13} + \cdots - \frac{1}{2}u - \frac{1}{4} \\ -\frac{1}{8}u^{15} + \frac{3}{4}u^{14} + \cdots + \frac{5}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ \frac{1}{4}u^{15} - \frac{3}{4}u^{14} + \cdots + 3u^2 + \frac{1}{2}u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ \frac{1}{4}u^{14} - \frac{3}{4}u^{13} + \cdots + u + \frac{1}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3 + 2u \\ \frac{1}{4}u^{14} - \frac{3}{4}u^{13} + \cdots + u + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1}{4}u^{15} + \frac{1}{2}u^{14} - \frac{7}{2}u^{13} - \frac{13}{4}u^{12} + 16u^{11} + \frac{25}{4}u^{10} - 26u^9 - \frac{15}{4}u^8 - 2u^7 + 3u^6 + \frac{71}{2}u^5 + 3u^4 - \frac{43}{4}u^3 - \frac{73}{4}u^2 - \frac{17}{2}u - \frac{25}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{16} + 7u^{15} + \cdots + 44u + 4$
c_2, c_6, c_7 c_{12}	$u^{16} - 3u^{15} + \cdots + 2u + 2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u^{16} + 3u^{15} + \cdots + 13u^2 - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{16} + 9y^{15} + \cdots - 912y + 16$
c_2, c_6, c_7 c_{12}	$y^{16} - 7y^{15} + \cdots - 44y + 4$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y^{16} - 21y^{15} + \cdots - 52y + 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.460675 + 0.652431I$ $a = -0.24371 - 1.70252I$ $b = -1.082390 + 0.575570I$	$-0.65793 + 8.23117I$	$-13.0423 - 9.7478I$
$u = -0.460675 - 0.652431I$ $a = -0.24371 + 1.70252I$ $b = -1.082390 - 0.575570I$	$-0.65793 - 8.23117I$	$-13.0423 + 9.7478I$
$u = -0.072765 + 0.670397I$ $a = 0.742469 + 1.137170I$ $b = -0.597448 - 0.616549I$	$2.40804 - 1.30590I$	$-6.45602 + 2.87023I$
$u = -0.072765 - 0.670397I$ $a = 0.742469 - 1.137170I$ $b = -0.597448 + 0.616549I$	$2.40804 + 1.30590I$	$-6.45602 - 2.87023I$
$u = -1.373820 + 0.091320I$ $a = 0.060941 - 1.153540I$ $b = -0.954330 + 0.864485I$	$-4.84234 + 6.50433I$	$-18.6838 - 5.6582I$
$u = -1.373820 - 0.091320I$ $a = 0.060941 + 1.153540I$ $b = -0.954330 - 0.864485I$	$-4.84234 - 6.50433I$	$-18.6838 + 5.6582I$
$u = -0.600707 + 0.156541I$ $a = 0.458062 - 0.140381I$ $b = 0.995675 + 0.611607I$	$-1.05898 - 4.82166I$	$-12.56614 + 2.63826I$
$u = -0.600707 - 0.156541I$ $a = 0.458062 + 0.140381I$ $b = 0.995675 - 0.611607I$	$-1.05898 + 4.82166I$	$-12.56614 - 2.63826I$
$u = 1.46308 + 0.25525I$ $a = 0.482041 - 0.685495I$ $b = -0.313593 + 0.976118I$	$-7.57778 - 5.08797I$	$-15.4427 + 2.0730I$
$u = 1.46308 - 0.25525I$ $a = 0.482041 + 0.685495I$ $b = -0.313593 - 0.976118I$	$-7.57778 + 5.08797I$	$-15.4427 - 2.0730I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.54279 + 0.38128I$ $a = -0.60505 + 1.42874I$ $b = -1.251330 - 0.593482I$	$-13.5367 - 16.5917I$	$-19.8881 + 8.7336I$
$u = 1.54279 - 0.38128I$ $a = -0.60505 - 1.42874I$ $b = -1.251330 + 0.593482I$	$-13.5367 + 16.5917I$	$-19.8881 - 8.7336I$
$u = 0.312284$ $a = 0.735032$ $b = 0.360485$	-0.574194	-17.1260
$u = 1.73739 + 0.15693I$ $a = 0.464177 + 0.067848I$ $b = 1.109290 - 0.308310I$	$-17.5882 + 1.3769I$	$-22.4716 - 5.7757I$
$u = 1.73739 - 0.15693I$ $a = 0.464177 - 0.067848I$ $b = 1.109290 + 0.308310I$	$-17.5882 - 1.3769I$	$-22.4716 + 5.7757I$
$u = -1.78286$ $a = 0.547112$ $b = 0.827780$	-15.7038	-9.77250

II. $I_2^u = \langle 9u^7-7u^6+\cdots+23b-39,\ 66u^7-13u^6+\cdots+161a-194,\ u^8-2u^7+\cdots-4u+7\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-0.409938u^7+0.0807453u^6+\cdots+0.397516u+1.20497\\-0.391304u^7+0.304348u^6+\cdots-0.347826u+1.69565\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.732919u^7-0.204969u^6+\cdots-0.316770u-3.36646\\0.130435u^7-0.434783u^6+\cdots-0.217391u-1.56522\end{pmatrix}$$

$$a_1 = \begin{pmatrix}0.863354u^7-0.639752u^6+\cdots-0.534161u-4.93168\\0.130435u^7-0.434783u^6+\cdots-0.217391u-1.56522\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}0.0248447u^7+0.298137u^6+\cdots-0.993789u+0.987578\\0.521739u^7+0.260870u^6+\cdots+1.13043u-2.26087\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-0.161491u^7+0.0621118u^6+\cdots-0.540373u-0.919255\\-0.652174u^7+0.173913u^6+\cdots+0.0869565u+2.82609\end{pmatrix}$$

$$a_9 = \begin{pmatrix}0.118012u^7+0.416149u^6+\cdots+1.27950u-0.559006\\0.869565u^7-0.565217u^6+\cdots+1.21739u-3.43478\end{pmatrix}$$

$$a_8 = \begin{pmatrix}0.987578u^7-0.149068u^6+\cdots+0.496894u-3.99379\\1.17391u^7-0.913043u^6+\cdots-0.956522u-7.08696\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{12}{23}u^7+\frac{52}{23}u^6-\frac{32}{23}u^5-\frac{124}{23}u^4-\frac{44}{23}u^3+\frac{108}{23}u^2+\frac{72}{23}u-\frac{374}{23}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^4 + 3u^3 + 5u^2 + 3u + 1)^2$
c_2, c_6, c_7 c_{12}	$(u^4 + u^3 - u^2 - u + 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u^8 + 2u^7 - 2u^6 - 4u^5 + 3u^4 + u^3 - 5u^2 + 4u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^4 + y^3 + 9y^2 + y + 1)^2$
c_2, c_6, c_7 c_{12}	$(y^4 - 3y^3 + 5y^2 - 3y + 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y^8 - 8y^7 + 26y^6 - 42y^5 + 35y^4 - 27y^3 + 59y^2 - 86y + 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.443967 + 1.001530I$ $a = -0.33695 + 1.52789I$ $b = 1.192440 - 0.547877I$	$-7.14707 + 11.56320I$	$-17.7958 - 8.2615I$
$u = -0.443967 - 1.001530I$ $a = -0.33695 - 1.52789I$ $b = 1.192440 + 0.547877I$	$-7.14707 - 11.56320I$	$-17.7958 + 8.2615I$
$u = 1.160120 + 0.413025I$ $a = 0.047679 + 0.419061I$ $b = -0.692440 + 0.318148I$	$-4.36747 + 1.41376I$	$-16.2042 - 4.7974I$
$u = 1.160120 - 0.413025I$ $a = 0.047679 - 0.419061I$ $b = -0.692440 - 0.318148I$	$-4.36747 - 1.41376I$	$-16.2042 + 4.7974I$
$u = -1.230820 + 0.345720I$ $a = -0.764039 - 0.865204I$ $b = -0.692440 + 0.318148I$	$-4.36747 + 1.41376I$	$-16.2042 - 4.7974I$
$u = -1.230820 - 0.345720I$ $a = -0.764039 + 0.865204I$ $b = -0.692440 - 0.318148I$	$-4.36747 - 1.41376I$	$-16.2042 + 4.7974I$
$u = 1.51466 + 0.24279I$ $a = 0.98189 - 1.11892I$ $b = 1.192440 + 0.547877I$	$-7.14707 - 11.56320I$	$-17.7958 + 8.2615I$
$u = 1.51466 - 0.24279I$ $a = 0.98189 + 1.11892I$ $b = 1.192440 - 0.547877I$	$-7.14707 + 11.56320I$	$-17.7958 - 8.2615I$

III. $\boldsymbol{I^u_3 =}$
$\boldsymbol{\langle -u^{11}a - u^{10}a + \cdots + 2a - 3,\ 2u^{11}a - u^{11} + \cdots - 4a + 1,\ u^{12} + u^{11} + \cdots - 8u^3 + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ \frac{1}{2}u^{11}a + \frac{1}{2}u^{10}a + \cdots - a + \frac{3}{2} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ -u^{11}a - u^{10}a + \cdots + a - \frac{3}{2} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{11}a - u^{10}a + \cdots + 2a - \frac{3}{2} \\ -u^{11}a - u^{10}a + \cdots + a - \frac{3}{2} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{10}a - \frac{1}{2}u^{10} + \cdots - \frac{3}{2}a + \frac{3}{2} \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -\frac{1}{2}u^{11} - \frac{1}{2}u^{10} + \cdots + 3u^2 + \frac{1}{2}u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ -\frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots + u + \frac{1}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^3 + 2u \\ -\frac{1}{2}u^{10} - \frac{1}{2}u^9 + \cdots + u + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -2u^{11} - u^{10} + 15u^9 + 4u^8 - 41u^7 + 2u^6 + 46u^5 - 25u^4 - 14u^3 + 23u^2 - 4u - 13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{24} + 13u^{23} + \cdots + 280u + 121$
c_2, c_6, c_7 c_{12}	$u^{24} - 3u^{23} + \cdots - 40u + 11$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(u^{12} - u^{11} - 7u^{10} + 6u^9 + 18u^8 - 11u^7 - 19u^6 + 2u^5 + 6u^4 + 8u^3 + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{24} - 5y^{23} + \cdots + 60024y + 14641$
c_2, c_6, c_7 c_{12}	$y^{24} - 13y^{23} + \cdots - 280y + 121$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y^{12} - 15y^{11} + \cdots + 12y^2 + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.298602 + 0.646764I$ $a = 0.676873 - 0.802179I$ $b = -0.385582 + 0.728163I$	$1.36284 - 3.28049I$	$-9.00565 + 5.25300I$
$u = 0.298602 + 0.646764I$ $a = 0.14585 + 1.81517I$ $b = -0.956017 - 0.547380I$	$1.36284 - 3.28049I$	$-9.00565 + 5.25300I$
$u = 0.298602 - 0.646764I$ $a = 0.676873 + 0.802179I$ $b = -0.385582 - 0.728163I$	$1.36284 + 3.28049I$	$-9.00565 - 5.25300I$
$u = 0.298602 - 0.646764I$ $a = 0.14585 - 1.81517I$ $b = -0.956017 + 0.547380I$	$1.36284 + 3.28049I$	$-9.00565 - 5.25300I$
$u = 1.37505$ $a = 0.230814 + 1.020720I$ $b = -0.789240 - 0.932040I$	-4.33833	-18.1100
$u = 1.37505$ $a = 0.230814 - 1.020720I$ $b = -0.789240 + 0.932040I$	-4.33833	-18.1100
$u = 0.527999$ $a = 0.534112 + 0.186718I$ $b = 0.668373 - 0.583240I$	-0.0415570	-11.1730
$u = 0.527999$ $a = 0.534112 - 0.186718I$ $b = 0.668373 + 0.583240I$	-0.0415570	-11.1730
$u = -1.50349 + 0.33368I$ $a = 0.486081 + 0.616876I$ $b = -0.211945 - 1.000110I$	$-10.3396 + 10.8681I$	$-17.3574 - 5.7403I$
$u = -1.50349 + 0.33368I$ $a = -0.48833 - 1.44566I$ $b = -1.209730 + 0.620883I$	$-10.3396 + 10.8681I$	$-17.3574 - 5.7403I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.50349-0.33368I$ $a=\ \ 0.486081-0.616876I$ $b=-0.211945+1.000110I$	$-10.3396-10.8681I$	$-17.3574+5.7403I$
$u=-1.50349-0.33368I$ $a=-0.48833+1.44566I$ $b=-1.209730-0.620883I$	$-10.3396-10.8681I$	$-17.3574+5.7403I$
$u=-1.54202+0.13644I$ $a=\ \ 0.652546+0.799251I$ $b=-0.387061-0.750740I$	$-13.39880+1.20346I$	$-19.4759+0.4307I$
$u=-1.54202+0.13644I$ $a=\ \ 0.422211-0.033636I$ $b=\ \ 1.353550+0.187496I$	$-13.39880+1.20346I$	$-19.4759+0.4307I$
$u=-1.54202-0.13644I$ $a=\ \ 0.652546-0.799251I$ $b=-0.387061+0.750740I$	$-13.39880-1.20346I$	$-19.4759-0.4307I$
$u=-1.54202-0.13644I$ $a=\ \ 0.422211+0.033636I$ $b=\ \ 1.353550-0.187496I$	$-13.39880-1.20346I$	$-19.4759-0.4307I$
$u=-0.245576+0.368193I$ $a=\ \ 0.463029-0.035853I$ $b=\ \ 1.146820+0.166231I$	$-3.40144+0.93377I$	$-14.2840-7.3829I$
$u=-0.245576+0.368193I$ $a=\ \ 0.33431-3.63181I$ $b=-0.974867+0.273032I$	$-3.40144+0.93377I$	$-14.2840-7.3829I$
$u=-0.245576-0.368193I$ $a=\ \ 0.463029+0.035853I$ $b=\ \ 1.146820-0.166231I$	$-3.40144-0.93377I$	$-14.2840+7.3829I$
$u=-0.245576-0.368193I$ $a=\ \ 0.33431+3.63181I$ $b=-0.974867-0.273032I$	$-3.40144-0.93377I$	$-14.2840+7.3829I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.54096 + 0.25161I$ $a = 0.413609 + 0.054874I$ $b = 1.375920 - 0.315214I$	$-15.6238 - 6.2841I$	$-21.2355 + 3.9797I$
$u = 1.54096 + 0.25161I$ $a = -0.37111 + 1.64681I$ $b = -1.130230 - 0.577888I$	$-15.6238 - 6.2841I$	$-21.2355 + 3.9797I$
$u = 1.54096 - 0.25161I$ $a = 0.413609 - 0.054874I$ $b = 1.375920 + 0.315214I$	$-15.6238 + 6.2841I$	$-21.2355 - 3.9797I$
$u = 1.54096 - 0.25161I$ $a = -0.37111 - 1.64681I$ $b = -1.130230 + 0.577888I$	$-15.6238 + 6.2841I$	$-21.2355 - 3.9797I$

IV. $\boldsymbol{I_4^u = \langle -340u^{15}a - 770u^{15} + \cdots + 249a + 651,\ -180u^{15}a + 621u^{15} + \cdots - 493a + 1534,\ u^{16} + u^{15} + \cdots + 6u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ 7.23404au^{15} + 16.3830u^{15} + \cdots - 5.29787a - 13.8511 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 15.6596au^{15} + 34.0638u^{15} + \cdots - 18.0213a - 28.8085 \\ 3.12766au^{15} + 9.10638u^{15} + \cdots - 3.61702a - 2.68085 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 18.7872au^{15} + 43.1702u^{15} + \cdots - 21.6383a - 31.4894 \\ 3.12766au^{15} + 9.10638u^{15} + \cdots - 3.61702a - 2.68085 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -16.3830au^{15} - 31.7234u^{15} + \cdots + 13.8511a + 37.8298 \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 3.04255u^{15} + 4.72340u^{14} + \cdots - 26.3830u + 10.1277 \\ -0.106383u^{15} + 1.19149u^{14} + \cdots - 7.04255u + 2.68085 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.680851u^{15} - 0.574468u^{14} + \cdots + 1.12766u + 2.95745 \\ 0.382979u^{15} + 1.51064u^{14} + \cdots - 8.44681u + 3.14894 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.297872u^{15} + 0.936170u^{14} + \cdots - 9.31915u + 6.10638 \\ 0.723404u^{15} + 2.29787u^{14} + \cdots - 12.5106u + 4.17021 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{4}{47}u^{15} + \frac{120}{47}u^{14} + \frac{64}{47}u^{13} - \frac{652}{47}u^{12} + \frac{36}{47}u^{11} + 28u^{10} - \frac{856}{47}u^9 - \frac{1120}{47}u^8 + \frac{1372}{47}u^7 + \frac{364}{47}u^6 - \frac{708}{47}u^5 - \frac{456}{47}u^4 + \frac{928}{47}u^3 + \frac{412}{47}u^2 - \frac{904}{47}u - \frac{294}{47}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^{16} + 9u^{15} + \cdots - 8u^2 + 1)^2$
c_2, c_6, c_7 c_{12}	$(u^{16} + u^{15} + \cdots - 2u - 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(u^{16} - u^{15} + \cdots - 6u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^{16} - 5y^{15} + \cdots - 16y + 1)^2$
c_2, c_6, c_7 c_{12}	$(y^{16} - 9y^{15} + \cdots - 8y^2 + 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y^{16} - 13y^{15} + \cdots - 24y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.396638 + 0.883588I$ $a = -0.337682 + 1.319500I$ $b = 0.203747 - 0.848147I$	$-4.20006 - 6.44354I$	$-14.5716 + 5.2942I$
$u = 0.396638 + 0.883588I$ $a = -0.60336 - 1.62827I$ $b = 1.130780 + 0.529217I$	$-4.20006 - 6.44354I$	$-14.5716 + 5.2942I$
$u = 0.396638 - 0.883588I$ $a = -0.337682 - 1.319500I$ $b = 0.203747 + 0.848147I$	$-4.20006 + 6.44354I$	$-14.5716 - 5.2942I$
$u = 0.396638 - 0.883588I$ $a = -0.60336 + 1.62827I$ $b = 1.130780 - 0.529217I$	$-4.20006 + 6.44354I$	$-14.5716 - 5.2942I$
$u = 0.825972 + 0.646815I$ $a = -0.747776 + 1.028940I$ $b = -0.097535 - 0.616980I$	$-5.53908 + 1.13123I$	$-16.5848 - 0.5108I$
$u = 0.825972 + 0.646815I$ $a = 0.699291 - 0.157718I$ $b = -1.082580 + 0.348383I$	$-5.53908 + 1.13123I$	$-16.5848 - 0.5108I$
$u = 0.825972 - 0.646815I$ $a = -0.747776 - 1.028940I$ $b = -0.097535 + 0.616980I$	$-5.53908 - 1.13123I$	$-16.5848 + 0.5108I$
$u = 0.825972 - 0.646815I$ $a = 0.699291 + 0.157718I$ $b = -1.082580 - 0.348383I$	$-5.53908 - 1.13123I$	$-16.5848 + 0.5108I$
$u = -0.558144 + 0.766237I$ $a = 0.638881 + 0.698673I$ $b = -1.242710 - 0.322774I$	$-8.73915 + 2.57849I$	$-19.7229 - 3.5680I$
$u = -0.558144 + 0.766237I$ $a = -0.49735 + 2.23196I$ $b = 1.134620 - 0.424735I$	$-8.73915 + 2.57849I$	$-19.7229 - 3.5680I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.558144 - 0.766237I$ $a = 0.638881 - 0.698673I$ $b = -1.242710 + 0.322774I$	$-8.73915 - 2.57849I$	$-19.7229 + 3.5680I$
$u = -0.558144 - 0.766237I$ $a = -0.49735 - 2.23196I$ $b = 1.134620 + 0.424735I$	$-8.73915 - 2.57849I$	$-19.7229 + 3.5680I$
$u = 0.858124$ $a = 0.109112 + 0.579205I$ $b = 0.685501 - 0.640105I$	-0.0770056	-10.1360
$u = 0.858124$ $a = 0.109112 - 0.579205I$ $b = 0.685501 + 0.640105I$	-0.0770056	-10.1360
$u = -1.15431$ $a = -2.11363$ $b = -1.14767$	-5.73470	-12.1060
$u = -1.15431$ $a = -2.18260$ $b = 0.684028$	-5.73470	-12.1060
$u = -1.396840 + 0.083857I$ $a = -1.161560 - 0.612877I$ $b = -1.082580 + 0.348383I$	$-5.53908 + 1.13123I$	$-16.5848 - 0.5108I$
$u = -1.396840 + 0.083857I$ $a = -0.343421 + 0.057531I$ $b = -0.097535 - 0.616980I$	$-5.53908 + 1.13123I$	$-16.5848 - 0.5108I$
$u = -1.396840 - 0.083857I$ $a = -1.161560 + 0.612877I$ $b = -1.082580 - 0.348383I$	$-5.53908 - 1.13123I$	$-16.5848 + 0.5108I$
$u = -1.396840 - 0.083857I$ $a = -0.343421 - 0.057531I$ $b = -0.097535 + 0.616980I$	$-5.53908 - 1.13123I$	$-16.5848 + 0.5108I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41338 + 0.10034I$ $a = -1.225930 - 0.338953I$ $b = -1.242710 + 0.322774I$	$-8.73915 - 2.57849I$	$-19.7229 + 3.5680I$
$u = 1.41338 + 0.10034I$ $a = 1.13766 - 1.49836I$ $b = 1.134620 + 0.424735I$	$-8.73915 - 2.57849I$	$-19.7229 + 3.5680I$
$u = 1.41338 - 0.10034I$ $a = -1.225930 + 0.338953I$ $b = -1.242710 - 0.322774I$	$-8.73915 + 2.57849I$	$-19.7229 - 3.5680I$
$u = 1.41338 - 0.10034I$ $a = 1.13766 + 1.49836I$ $b = 1.134620 - 0.424735I$	$-8.73915 + 2.57849I$	$-19.7229 - 3.5680I$
$u = -1.42845 + 0.22812I$ $a = 0.90855 + 1.25257I$ $b = 1.130780 - 0.529217I$	$-4.20006 + 6.44354I$	$-14.5716 - 5.2942I$
$u = -1.42845 + 0.22812I$ $a = -0.292432 - 0.232008I$ $b = 0.203747 + 0.848147I$	$-4.20006 + 6.44354I$	$-14.5716 - 5.2942I$
$u = -1.42845 - 0.22812I$ $a = 0.90855 - 1.25257I$ $b = 1.130780 + 0.529217I$	$-4.20006 - 6.44354I$	$-14.5716 + 5.2942I$
$u = -1.42845 - 0.22812I$ $a = -0.292432 + 0.232008I$ $b = 0.203747 - 0.848147I$	$-4.20006 - 6.44354I$	$-14.5716 + 5.2942I$
$u = 0.551002$ $a = 2.98683$ $b = -1.14767$	-5.73470	-12.1060
$u = 0.551002$ $a = -5.22255$ $b = 0.684028$	-5.73470	-12.1060

	Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	0.240055		
$a =$	$1.98199 + 1.16965I$	-0.0770056	-10.1360
$b =$	$0.685501 + 0.640105I$		
$u =$	0.240055		
$a =$	$1.98199 - 1.16965I$	-0.0770056	-10.1360
$b =$	$0.685501 - 0.640105I$		

V. $\boldsymbol{I_5^u = \langle 2a^3 + 2a^2 + b + 5a + 3,\ 2a^4 + 2a^3 + 5a^2 + 4a + 1,\ u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -2a^3 - 2a^2 - 5a - 3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -a \\ -4a^3 - 2a^2 - 8a - 4 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -4a^3 - 2a^2 - 9a - 4 \\ -4a^3 - 2a^2 - 8a - 4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2a^3 - 4a - 1 \\ -4a^3 - 2a^2 - 8a - 2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 2a^3 + 5a + 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -2a^3 - 5a \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ -2a^3 - 5a - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 16a^3 + 8a^2 + 32a - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^2 - u + 2)^2$
c_2, c_6, c_7 c_{12}	$u^4 - u^2 + 2$
c_3, c_4, c_8 c_9	$(u - 1)^4$
c_5, c_{10}	$(u + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^2+3y+4)^2$
c_2, c_6, c_7 c_{12}	$(y^2-y+2)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y-1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.04738 + 1.47756I$ $b = 0.978318 - 0.676097I$	$-2.46740 + 5.33349I$	$-18.0000 - 5.2915I$
$u = 1.00000$ $a = -0.04738 - 1.47756I$ $b = 0.978318 + 0.676097I$	$-2.46740 - 5.33349I$	$-18.0000 + 5.2915I$
$u = 1.00000$ $a = -0.452616 + 0.154683I$ $b = -0.978318 - 0.676097I$	$-2.46740 - 5.33349I$	$-18.0000 + 5.2915I$
$u = 1.00000$ $a = -0.452616 - 0.154683I$ $b = -0.978318 + 0.676097I$	$-2.46740 + 5.33349I$	$-18.0000 - 5.2915I$

VI. $\boldsymbol{I_6^u = \langle u^3 + b - u - 1,\ -u^{11} + 4u^9 + \cdots + 2a + 1,\ u^{12} - u^{11} + \cdots + 2u + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u^{11} - 2u^9 + \cdots + \frac{1}{2}u - \frac{1}{2} \\ -u^3 + u + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{11} + u^{10} + \cdots - \frac{1}{2}u + \frac{3}{2} \\ -u^6 + 2u^4 + 2u^3 - u^2 - 2u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{1}{2}u^{11} + u^{10} + \cdots - \frac{5}{2}u + \frac{1}{2} \\ -u^6 + 2u^4 + 2u^3 - u^2 - 2u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{11} - u^9 + \cdots - \frac{11}{2}u - \frac{5}{2} \\ u^{11} - 4u^9 - 3u^8 + 6u^7 + 9u^6 - 2u^5 - 8u^4 - 4u^3 + u^2 + 3u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^{10} - u^9 - 4u^8 + u^7 + 9u^6 + 3u^5 - 10u^4 - 7u^3 + 3u^2 + 4u + 2 \\ u^9 - 3u^7 - 3u^6 + 3u^5 + 6u^4 + u^3 - 3u^2 - 2u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2u^{11} + 2u^{10} + 8u^9 - u^8 - 18u^7 - 9u^6 + 17u^5 + 17u^4 - 7u^2 - 8u - 2 \\ u^{11} - 2u^{10} - 4u^9 + 4u^8 + 12u^7 - 16u^5 - 8u^4 + 5u^3 + 6u^2 + 5u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{11} + 4u^9 + 3u^8 - 6u^7 - 9u^6 + u^5 + 9u^4 + 6u^3 - u^2 - 5u - 2 \\ -u^{10} - u^9 + 4u^8 + 6u^7 - 2u^6 - 11u^5 - 7u^4 + 3u^3 + 7u^2 + 5u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{11} + 2u^{10} - 18u^9 - 20u^8 + 24u^7 + 52u^6 + 2u^5 - 42u^4 - 28u^3 + 2u^2 + 12u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^6 + 2u^5 + 3u^4 + u^3 + u^2 - u + 1)^2$
c_2, c_6, c_7 c_{12}	$(u^6 - u^4 - u^3 + u^2 + u + 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$u^{12} + u^{11} - 4u^{10} + 9u^8 - 6u^7 - 7u^6 + 10u^5 - 3u^4 - 3u^3 + 5u^2 - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^6 + 2y^5 + 7y^4 + 11y^3 + 9y^2 + y + 1)^2$
c_2, c_6, c_7 c_{12}	$(y^6 - 2y^5 + 3y^4 - y^3 + y^2 + y + 1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y^{12} - 9y^{11} + \cdots + 6y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.048730 + 0.280811I$ $a = 0.365804 + 1.070810I$ $b = 0.856601 - 0.623578I$	$-0.56604 + 4.89103I$	$-11.87827 - 6.59162I$
$u = -1.048730 - 0.280811I$ $a = 0.365804 - 1.070810I$ $b = 0.856601 + 0.623578I$	$-0.56604 - 4.89103I$	$-11.87827 + 6.59162I$
$u = -0.873118 + 0.859069I$ $a = 0.405852 + 0.292449I$ $b = -1.140590 - 0.471635I$	$-8.39843 - 5.32947I$	$-19.4826 + 4.5439I$
$u = -0.873118 - 0.859069I$ $a = 0.405852 - 0.292449I$ $b = -1.140590 + 0.471635I$	$-8.39843 + 5.32947I$	$-19.4826 - 4.5439I$
$u = -0.331855 + 0.650057I$ $a = -0.44987 - 1.64991I$ $b = 0.283992 + 0.709987I$	$-1.72760 + 1.71504I$	$-10.63910 - 1.32670I$
$u = -0.331855 - 0.650057I$ $a = -0.44987 + 1.64991I$ $b = 0.283992 - 0.709987I$	$-1.72760 - 1.71504I$	$-10.63910 + 1.32670I$
$u = 1.286280 + 0.180616I$ $a = -0.348442 + 0.274282I$ $b = 0.283992 - 0.709987I$	$-1.72760 - 1.71504I$	$-10.63910 + 1.32670I$
$u = 1.286280 - 0.180616I$ $a = -0.348442 - 0.274282I$ $b = 0.283992 + 0.709987I$	$-1.72760 + 1.71504I$	$-10.63910 - 1.32670I$
$u = -0.081560 + 0.504924I$ $a = -1.45936 - 0.10824I$ $b = 0.856601 + 0.623578I$	$-0.56604 - 4.89103I$	$-11.87827 + 6.59162I$
$u = -0.081560 - 0.504924I$ $a = -1.45936 + 0.10824I$ $b = 0.856601 - 0.623578I$	$-0.56604 + 4.89103I$	$-11.87827 - 6.59162I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.54898 + 0.07617I$ $a = -1.013980 + 0.488782I$ $b = -1.140590 - 0.471635I$	$-8.39843 - 5.32947I$	$-19.4826 + 4.5439I$
$u = 1.54898 - 0.07617I$ $a = -1.013980 - 0.488782I$ $b = -1.140590 + 0.471635I$	$-8.39843 + 5.32947I$	$-19.4826 - 4.5439I$

VII. $I^u_7 = \langle b-1,\ 6a+u-3,\ u^2-3\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\3\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u\\-2u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-2\\-3\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-\frac{1}{6}u+\frac{1}{2}\\1\end{pmatrix}$$
$$a_2 = \begin{pmatrix}\frac{1}{6}u+\frac{1}{2}\\-1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}\frac{1}{6}u-\frac{1}{2}\\-1\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-\frac{5}{6}u-\frac{1}{2}\\-2u-1\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u\\-2u\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7 c_{11}	$(u-1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	u^2-3
c_6, c_{12}	$(u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_7, c_{11}, c_{12}	$(y-1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y-3)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.73205$ $a = 0.211325$ $b = 1.00000$	-16.4493	-24.0000
$u = -1.73205$ $a = 0.788675$ $b = 1.00000$	-16.4493	-24.0000

VIII. $\boldsymbol{I_8^u = \langle -2au + 4b + 2a - u + 5,\ 4a^2 + 4a - 7,\ u^2 - 2u + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 2u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ -2u + 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2u + 2 \\ 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a \\ \frac{1}{2}au - \frac{1}{2}a + \frac{1}{4}u - \frac{5}{4} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{4}au + \frac{3}{4}a - \frac{7}{8}u + \frac{15}{8} \\ au - a + \frac{1}{2}u - \frac{3}{2} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{5}{4}au - \frac{1}{4}a - \frac{3}{8}u + \frac{3}{8} \\ au - a + \frac{1}{2}u - \frac{3}{2} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{3}{4}au + \frac{1}{4}a + \frac{3}{8}u - \frac{11}{8} \\ -2u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2u - 3 \\ -au + a - \frac{1}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -3u + 4 \\ au - a + \frac{3}{2}u - \frac{1}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u + 2 \\ au - a + \frac{5}{2}u - \frac{5}{2} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_4 c_6, c_8, c_9 c_{11}, c_{12}	$(u-1)^4$
c_2, c_5, c_7 c_{10}	$(u+1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_6 c_7, c_8, c_9 c_{10}, c_{11}, c_{12}	$(y-1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.914214$ $b = -1.00000$	-6.57974	-24.0000
$u = 1.00000$ $a = 0.914214$ $b = -1.00000$	-6.57974	-24.0000
$u = 1.00000$ $a = -1.91421$ $b = -1.00000$	-6.57974	-24.0000
$u = 1.00000$ $a = -1.91421$ $b = -1.00000$	-6.57974	-24.0000

IX. $I_9^u = \langle b,\ a+1,\ u+1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_7, c_{11}, c_{12}	u
c_3, c_4, c_8 c_9	$u + 1$
c_5, c_{10}	$u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_7, c_{11}, c_{12}	y
c_3, c_4, c_5 c_8, c_9, c_{10}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -1.00000$ $b = 0$	-3.28987	-12.0000

X. $I_{10}^{u} = \langle 2a^3 + 4a^2 + b + 6a + 3,\ 2a^4 + 4a^3 + 6a^2 + 4a + 1,\ u + 1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -2a^3 - 4a^2 - 6a - 3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -a \\ -4a^3 - 6a^2 - 8a - 3 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -4a^3 - 6a^2 - 9a - 3 \\ -4a^3 - 6a^2 - 8a - 3 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2a^3 - 4a^2 - 5a - 2 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ -2a^2 - 2a - 2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ -2a^2 - 2a - 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1 \\ -2a^2 - 2a - 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^2+1)^2$
c_2, c_6, c_7 c_{12}	u^4+1
c_3, c_4, c_8 c_9	$(u+1)^4$
c_5, c_{10}	$(u-1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y+1)^4$
c_2, c_6, c_7 c_{12}	$(y^2+1)^2$
c_3, c_4, c_5 c_8, c_9, c_{10}	$(y-1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_{10}^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-0.500000+1.207110I$ $b=\ \ 0.707107-0.707107I$	-1.64493	-16.0000
$u=-1.00000$ $a=-0.500000-1.207110I$ $b=\ \ 0.707107+0.707107I$	-1.64493	-16.0000
$u=-1.00000$ $a=-0.500000+0.207107I$ $b=-0.707107-0.707107I$	-1.64493	-16.0000
$u=-1.00000$ $a=-0.500000-0.207107I$ $b=-0.707107+0.707107I$	-1.64493	-16.0000

XI. $I^u_{11} = \langle b+1,\ u-1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a+1 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} a \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a-1 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -24$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I^u_{11}	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$	-6.57974	-24.0000

XII. $\boldsymbol{I_1^v = \langle a,\ b-1,\ v+1 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7 c_{11}	$u - 1$
c_3, c_4, c_5 c_8, c_9, c_{10}	u
c_6, c_{12}	$u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_7, c_{11}, c_{12}	$y - 1$
c_3, c_4, c_5 c_8, c_9, c_{10}	y

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

XIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u(u-1)^7(u^2+1)^2(u^2-u+2)^2(u^4+3u^3+5u^2+3u+1)^2$ $\cdot((u^6+2u^5+3u^4+u^3+u^2-u+1)^2)(u^{16}+7u^{15}+\cdots+44u+4)$ $\cdot((u^{16}+9u^{15}+\cdots-8u^2+1)^2)(u^{24}+13u^{23}+\cdots+280u+121)$
c_2, c_7	$u(u-1)^3(u+1)^4(u^4+1)(u^4-u^2+2)(u^4+u^3-u^2-u+1)^2$ $\cdot((u^6-u^4-u^3+u^2+u+1)^2)(u^{16}-3u^{15}+\cdots+2u+2)$ $\cdot((u^{16}+u^{15}+\cdots-2u-1)^2)(u^{24}-3u^{23}+\cdots-40u+11)$
c_3, c_4, c_8 c_9	$u(u-1)^8(u+1)^5(u^2-3)$ $\cdot(u^8+2u^7-2u^6-4u^5+3u^4+u^3-5u^2+4u+7)$ $\cdot(u^{12}-u^{11}-7u^{10}+6u^9+18u^8-11u^7-19u^6+2u^5+6u^4+8u^3+1)^2$ $\cdot(u^{12}+u^{11}-4u^{10}+9u^8-6u^7-7u^6+10u^5-3u^4-3u^3+5u^2-2u+1)$ $\cdot((u^{16}-u^{15}+\cdots-6u-1)^2)(u^{16}+3u^{15}+\cdots+13u^2-2)$
c_5, c_{10}	$u(u-1)^5(u+1)^8(u^2-3)$ $\cdot(u^8+2u^7-2u^6-4u^5+3u^4+u^3-5u^2+4u+7)$ $\cdot(u^{12}-u^{11}-7u^{10}+6u^9+18u^8-11u^7-19u^6+2u^5+6u^4+8u^3+1)^2$ $\cdot(u^{12}+u^{11}-4u^{10}+9u^8-6u^7-7u^6+10u^5-3u^4-3u^3+5u^2-2u+1)$ $\cdot((u^{16}-u^{15}+\cdots-6u-1)^2)(u^{16}+3u^{15}+\cdots+13u^2-2)$
c_6, c_{12}	$u(u-1)^4(u+1)^3(u^4+1)(u^4-u^2+2)(u^4+u^3-u^2-u+1)^2$ $\cdot((u^6-u^4-u^3+u^2+u+1)^2)(u^{16}-3u^{15}+\cdots+2u+2)$ $\cdot((u^{16}+u^{15}+\cdots-2u-1)^2)(u^{24}-3u^{23}+\cdots-40u+11)$

XIV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y(y-1)^7(y+1)^4(y^2+3y+4)^2(y^4+y^3+9y^2+y+1)^2$ $\cdot((y^6+2y^5+\cdots+y+1)^2)(y^{16}-5y^{15}+\cdots-16y+1)^2$ $\cdot(y^{16}+9y^{15}+\cdots-912y+16)(y^{24}-5y^{23}+\cdots+60024y+14641)$
c_2, c_6, c_7 c_{12}	$y(y-1)^7(y^2+1)^2(y^2-y+2)^2(y^4-3y^3+5y^2-3y+1)^2$ $\cdot((y^6-2y^5+3y^4-y^3+y^2+y+1)^2)(y^{16}-9y^{15}+\cdots-8y^2+1)^2$ $\cdot(y^{16}-7y^{15}+\cdots-44y+4)(y^{24}-13y^{23}+\cdots-280y+121)$
c_3, c_4, c_5 c_8, c_9, c_{10}	$y(y-3)^2(y-1)^{13}$ $\cdot(y^8-8y^7+26y^6-42y^5+35y^4-27y^3+59y^2-86y+49)$ $\cdot((y^{12}-15y^{11}+\cdots+12y^2+1)^2)(y^{12}-9y^{11}+\cdots+6y+1)$ $\cdot(y^{16}-21y^{15}+\cdots-52y+4)(y^{16}-13y^{15}+\cdots-24y+1)^2$